

SEQUENCE LISTING**SEQ ID NO: 1**

Amino acid sequence of the Signal Peptide ER:

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MKTNLFLFLIFSLLSLSSAEF

SEQ ID NO: 2

10 Amino acid sequence of the Vacuolar targeting signal from Tobacco chitinase A:

DLLVDTM

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SEQ ID NO: 3

Nucleic acid sequence of the Forward primer:

cagaattcgcccgccccctgca

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SEQ ID NO: 4

Nucleic acid sequence of the Reverse primer:

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ctcagatcttggcgatgccaca

SEQ ID NO: 5

Nucleic acid sequence of the forward primer from the 35S promoter:

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ctcagaagaccagagggct

SEQ ID NO: 6

Nucleic acid sequence of the backward primer from the terminator:

5 caaagcggccatcgtgc

SEQ ID NO: 7

Nucleic acid sequence of the human GCD cDNA used for the
10 constructs of the invention

gcccggcc ctgcatccct aaaagcttcg gctacagctc ggtggtgtgt
gtctgcaatg ccacatactg tgactcctt gaccccccga ccttcctgc ccttggtacc ttcagccgct
atgagagtag acgcagtggg cgacggatgg agctgagttat ggggcccattc caggctaattc acacgggcac
15 aggcctgcta ctgaccctgc agccagaaca gaagttccag aaagtgaagg gatttggagg ggcattgaca
gatgctgctg ctctcaacat ctttgcctg tcacccctg cccaaaattt gctacttaaa tcgtacttct
ctgaagaagg aatcgatata aacatcatcc gggtacccat ggccagctgt gacttctcca tccgcaccta
cacctatgca gacacccctg atgatttcca gttgcacaac ttcaagcctcc cagaggaaga taccatgc
aagatacccc tgattcaccg agccctgcag ttggcccagc gtcccggttc actccctgcc agccctgg
20 catcaccac ttggctcaag accaatggag cggtaatgg gaagggtca ctcaaggac agcccgaga
catctaccac cagacctggg ccagatactt tgtgaagttc ctggatgcct atgctgagca caagttacag
ttctggcag tgacagctga aaatgagcct tctgctggc ttttgagtgg atacccttc cagtgcctgg
gcttcacccc tgaacatcag cgagacttca ttgcccgtga cctaggtcct accctcgcca acagtactca
ccacaatgtc cgccctactca tgctggatga ccaacgcctt ctgctgcccc actggcaaa ggtggactg
25 acagacccag aagcagctaa atatgttcat ggcattgctg tacattggta cctggacttt ctggctccag
ccaaagccac cctagggag acacaccgac tttcccaa caccatgctc ttgcctcag aggcctgtgt
gggctccaag ttctgggagc agagtgtcg gctaggctcc tggatcgag ggtgcagta cagccacagc
atcatcacga accctctgtta ccatgtggtc ggctggaccg actggaaacct tgccctgaac cccgaaggag
gacccaattt ggtgcgttaac tttgtcgaca gtcccatcat ttagacatc accaaggaca cgtttacaa
30 acagcccatg ttctaccacc ttggccactt cagcaagttc attcctgagg gctcccagag agtggggctg
gttgccagtc agaagaacga cctggacgca gtggcactga tgcattccga tggctctgct gttgtggctg

tgctaaaccg ctccctctaag gatgtgcctc ttaccatcaa ggatcctgct gtgggcttcc tggagacaat
ctcacctggc tactccattc acacctacct gtggcatcgc cag

5 **SEQ ID NO: 8**

Glucocerebrosidase amino acid sequence

A R P C I P K S F G Y S S V V
C V C N A T Y C D S F D P P T F P A L G T F S
10 R Y E S T R S G R R M E L S M G P I Q A N H T
G T G L L L T L Q P E Q K F Q K V K G F G G A
M T D A A A L N I L A L S P P A Q N L L L K S
Y F S E E G V R L L M L N D Q R L L L P H W A K V
V L T D P E A A K Y V H G I A V H W Y L D F L A P A K A
15 T L G E T H R L F P N T M L F A S E A C V G S K F W E
Q S V R L G S W D R G M Q Y S H S I I T N L L Y H V V
G W T D W N L A L N P E G G P N W V R N F V D S P I I
V D I T K D T F Y K Q P M F Y H L G H F S K F I P E G S
Q R V G L V A S Q K N D L D A V A L M H P D G S A V V
20 V V L N R S S K D V P L T I K D P A V G F L E T I S P G
Y S I H T Y L W H R Q

SEQ ID NO: 9

25 ³⁵S Promoter nucleic acid sequence

Ttttcacaaaggtaatatcgggaaacccctcggattccattgcccagctatctgtcactcatcg
aaaggacagttagaaaaggaaggtaggtggcctacaaatgccatcattgcgataaaggaaaggctatcggtca
agatgcctctaccgacagtggccaaagatggaccccccacccacgaggaacatcgatggaaaaagaaga
30 cgttccaaccacgtttcaaagcaagtggattgtgataatctccactgacgtaaaggatgacgcacaat
cccaactatccttcgcaagacccttccttatataaggaagttcatttcatttggagaggac

SEQ ID NO: 10

Nucleic acid sequence encoding the ER signal peptide

5 atgaagactaatctttctttctatctttcacttctc ctatcattatcctcgccgaattc

SEQ ID NO: 11

Nucleic acid sequence encoding the vacuolar targeting sequence

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gatcttttagtcgatactatg

SEQ ID NO: 12

15 Nucleic acid sequence of the terminator

taatttcatgatctgtttgttgtattcccttgcaatgcaggcctaggctatgaAtaaagttaatgt
gtgaatgtgtgaatgtgtgattgtgacctgaaggatcacgactataatcgaaaataaaaacaaagactttg
tcccaaaaaccccccccccncaga

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SEQ ID NO: 13

Nucleic acid sequence of the expression cassette of the invention

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tttcacaaaaggtaatatcgaaacccctcggttccatggccatgtcgactatcttcatttcattcg
aaaggacagttagaaaaggaagggtggctctacaaatgccatcattgcgataaaggaaaggctatcgatca
agatgcctctaccgacagtggccaaagatggaccccccacccacgaggaacatcgatggaaaagaaga
cgatccaaaccacgttcaagcaagtggattgtgatctccactgacgtaaaggatgacgcacaat
30 cccactatcctcgcaagacccttcattataaggaagttcatttcattggagaggacaggcttcttgag
atccttcaacaattaccaacaacaacaacaacattacaattactatattacaattacagtcga
gggatccaaggagatataacaatgaagactaatctttctttcatctttcacttcattatcc

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SEQ ID NO: 14

Amino acid sequence of the recombinant protein of the invention

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M K T N L F L F L I F S L L L S L S S A E F A R P C
I P K S F G Y S S V V C V C N A T Y C D S F D P P T F P

A L G T F S R Y E S T R S G R R M E L S M G P I Q A N
H T G T G L L L T L Q P E Q K F Q K V K G F G G A M T
D A A A L N I L A L S P P A Q N L L L K S Y F S E E G I G
Y N I I R V P M A S C D F S I R T Y T Y A D T P D D F Q
5 L H N F S L P E E D T K L K I P L I H R A L Q L A Q R P
V S L L A S P W T S P T W L K T N G A V N G K G S L K G
Q P G D I Y H Q T W A R Y F V K F L D A Y A E H K L Q
F W A V T A E N E P S A G L L S G Y P F Q C L G F T P E
H Q R D F I A R D L G P T L A N S T H H N V R L L M L
10 D D Q R L L L P H W A K V V L T D P E A A K Y V H G I
A V H W Y L D F L A P A K A T L G E T H R L F P N T M
L F A S E A C V G S K F W E Q S V R L G S W D R G M Q
Y S H S I I T N L L Y H V V G W T D W N L A L N P E G G
P N W V R N F V D S P I I V D I T K D T F Y K Q P M F Y
15 H L G H F S K F I P E G S Q R V G L V A S Q K N D L D
A V A L M H P D G S A V V V V L N R S S K D V P L T I K
D P A V G F L E T I S P G Y S I H T Y L W H R Q D L L V
D T M

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Other Embodiments

It is to be understood that while the invention has been described in conjunction with the detailed description thereof, the foregoing description is intended to illustrate and not limit the scope of the invention, which is defined by the scope of the appended claims. Other aspects, advantages, and modifications are within the scope of the following claims.

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